

Project Documentation: Customer Churn Analysis for Telecom Company

 **Project Title:** Customer Churn Analysis & Business Insights for Telco Company

Objective:

The goal of this project is to analyze telecom customer data to identify patterns related to churn (customer leaving the service), extract actionable insights, and provide business recommendations. This can help reduce churn and improve customer retention strategies.

Dataset Description:

File Name: Telco-Customer-Churn.csv

Source: Kaggle / Public Dataset

Total Records: ~7,043 rows

Columns: 21

Key Columns:

Column	Description
customerID	Unique customer ID
gender	Customer's gender
SeniorCitizen	1 if the customer is a senior citizen
Partner	Whether the customer has a partner
Dependents	Whether the customer has dependents
tenure	Number of months the customer has stayed
PhoneService, InternetService, StreamingTV, etc.	Various service-related features
MonthlyCharges, TotalCharges	Billing amounts

Churn	Target variable (Yes/No)
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🔧 Tools & Technologies Used:

1. Python
2. Jupyter Notebook
3. Pandas, NumPy
4. Matplotlib, Seaborn
5. Scikit-learn (for prediction tasks)
6. Tableau / Power BI (optional for dashboard visualization)

📊 Step-by-Step Project Workflow:

1. Data Understanding & Loading

- Loaded the CSV file using pandas
- Explored the structure, types, and initial statistics

2. Data Cleaning

- Handled missing values in TotalCharges
- Converted necessary columns to correct types (e.g., TotalCharges to float)
- Removed duplicate or irrelevant entries (if any)

3. Exploratory Data Analysis (EDA)

- Univariate and bivariate analysis:
- Distribution of Churn, tenure, MonthlyCharges
- Churn rate across demographics (gender, senior citizen, partner, etc.)
- Churn across services (StreamingTV, InternetService, etc.)
- Correlation matrix for numerical features

4. Key Insights

- Customers with fiber optic internet are more likely to churn
- Churn rate is higher for customers with month-to-month contracts
- Senior citizens have slightly higher churn probability
- Customers with high MonthlyCharges and short tenure are more likely to churn

5. Churn Prediction (Optional but valuable)

- Converted categorical variables using LabelEncoder / get_dummies
- Split data into train-test sets
- Trained models: Logistic Regression, Decision Tree, Random Forest
- Evaluated using accuracy, precision, recall, F1-score, and confusion matrix

6. Visualization (optional if using dashboard):

- Visualized churn distribution using pie and bar charts
- Box plots for comparing MonthlyCharges vs Churn
- Heatmaps for correlations
- Timeline graphs for tenure-based churn analysis



Business Recommendations:

- **Introduce Loyalty Discounts:** For customers with tenure < 12 months.
- **Optimize Service Bundling:** Offer discounts for combining TV + Internet + Phone to increase stickiness.
- **Focus on Contract Upgrades:** Encourage customers to switch from month-to-month to long-term contracts.
- **Senior Citizen Support Program:** Offer more tech support or simplified packages for elderly customers.
- **Early Intervention Program:** Monitor high monthly charges with short tenure and proactively offer retention packages.

Deliverables:

- ✓ EDA.ipynb (Full notebook with analysis and visualizations)
- ✓ Cleaned dataset (optional)
- ✓ Machine Learning model files (if prediction is included)
- ✓ Report Documentation (this file)
- ✓ Power BI / Tableau dashboard (optional)

Conclusion:

This project demonstrates my end-to-end data and business analysis skills — from data cleaning, EDA, and ML modeling to actionable business strategy recommendations. It is a perfect use case for telecom companies wanting to reduce churn and improve customer retention.

Contact & Portfolio:

If you're looking for a skilled Freelance Data Analyst who can derive real business value from raw data, let's connect!

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